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ABSTRACT

This paper examines the impact of electronic photography on instructional media and photo education. Photo education has been transformed by digital photography. Undergraduate and graduate programs in electronic imaging have been introduced, and virtually all undergraduate instruction in photography has a digital imaging component or core course. Topics covered in this paper include technical considerations, popular implication of photography, and a redefinition of photography. (JLB)

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Electronic Photography and Its Impact on Instructional Media and Photo Education

by Chris Lantz

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ELECTRONIC PHOTOGRAPHY AND ITS IMPACT ON INSTRUCTIONAL MEDIA AND PHOTO EDUCATION

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ABSTRACT

Photography is now a small subset of a new imaging field which is comprised of video, desktop publishing, graphic arts and others. Photo education has been transformed by digital photography. Undergraduate and graduate programs in electronic imaging have been introduced, and virtually all undergraduate instruction in photography has a digital imaging component or core course. The main restraint of the past decade for digital photography has been the cost of computer hardware. The recent introduction of low cost, fast, and memory-intensive microcomputers has made imaging possible to those on limited budgets.

One type of digital photography is the still image. Digital stills originate from scanned photographs, still video cameras, conventional video cameras, or digital cameras. Still images can be grabbed off of live video or from a video tape through the use of a digitizing board within a computer. The images from still video cameras must also be grabbed by a digitizing board. The signal from digital cameras can interface directly with a computer. Another type of digital photography is digital movies. Digital movies or digital video clips are also captured using a digitizing board. The digital video file for the Macintosh is Quicktime. Digital video has two main advantages over linear video tape systems that are specific to educational applications. The random access capability of digital video is conducive to the integration of video clips into instructional computing applications such

as self-paced learning. Another main advantage of the digital video file format is its mutability within the computer for special effect applications. Digital data filtering has made professional editing effects accessible to those on limited budgets. The same tools available to a commercial producer are now available to the limited budget educational videographer.

Digital still images and digital video clips are now typical components of presentations and interactive instruction. This visually-enhanced instructional material can be inexpensively mastered on a variety of recently introduced formats such as Kodak's Photo Compact Disk Portfolio or Phillips Compact Disk Interactive. Educational television applications such as distance education have also been heavily impacted by the use of digital non-linear video. At Western Illinois University, digital video is integrated into teacher education instruction as part of a general course on instructional media. Digital video is defined on two levels to teacher educators. On one level, Apple's original Quicktime digital video format is utilized for integration into a student-produced computer presentation. In its original format, Quicktime video clips are the size of four postage stamps and low in resolution. Low resolution Quicktime is appropriate for applications which demonstrate basic motion or non-detail intensive visual information. It is adequate in introducing the concept of digital video to many students at a time on low cost computers using Quicktime editing programs. On another level, Quicktime acts as an introduction to higher resolution digital video editing equipment used in the creation of professional quality instructional video productions.

TECHNICAL CONSIDERATIONS

Electronic imaging has been routinely used since 1982 for big budget applications such as commercial publishing and special effects in Hollywood movies. Use of high end personal computers for digital photography did not become practical until the mid 1980's. Consumer level desktop imaging did not become available until the late 1980's. The development of digital video imaging on microcomputer was as recent as December 1991.

The five main technical barriers to inexpensive, high-quality digital imaging are disk storage, computer speed, camera sensor resolution, projection, and hard copy output (Larish, 1990). Digitizing in photographic resolution requires large random access memory and disk storage capacity. It takes nearly 40 megabytes to store the information contained in one 8x10 inch black and white photograph. Currently the photograph itself is a less expensive storage medium than 40 megabytes of disk storage. Efficient computer storage devices already exist but cost and size have not shrunk to the degree necessary for the construction of small, inexpensive cameras of photographic resolution. One major advance in computer storage has been Kodak's introduction of the Photo CD. Previous to Photo CD there was no low cost and easily transportable medium for student image files. Picture files on Photo CD can be opened at resolutions ranging from low to very high. An additional advantage of the Photo CD is very inexpensive compact disk authoring of memory- intensive multimedia programs.

The present advantages of digital video are often offset by the disadvantage of low resolution. This low resolution is the result of the current cost of high speed and memory-intensive microcomputers. In the near future, cost will no longer be such a major restraint. Apples' introduction of the Power Personal Computer has made even low cost systems compatible with digital video. The cost of computer memory and speed lowers on a monthly basis but the cost of high resolution camera sensors, color hard copy, and projection is more of a long-term problem. These technologies are further behind because they are attempting to match the quality of conventional photography. The fidelity of film is hard to match with computer hardware.

Many of these technical barriers are being addressed in colleges by the availability of permanent electronic classroom installations like the College of Education's GTE Electronic Classroom at Western Illinois University. Another approach is the use of portable equipment that can be used in any classroom. The WIU Electronic Classroom is one in which the professor can control from a central podium, microcomputers and multimedia equipment for selective display on a high resolution video projector.

POPULAR IMPLICATIONS

Photography has the ability to deceive without detection because of its perception as optical reality. This deception will be more problematic with highly-mutable digital images. Composite imagery of realistic elements in often unrealistic combinations is descriptive of many digital tabloid photos today. These techniques are not unique to digital images. Early pictorialist photographers also explored the

possibility that the realism of photography could be used as a special effect (Mitchell, 1992). Image processing technology has long been responsible for creating futuristic graphics, but as the computer capacity increases so does its ability to render or falsify more complex natural forms. Traditional negatives and prints are easily authenticated, but when the image originates as digital data for direct input into computers, this safety buffer does not exist. As the possibilities of manipulation become public knowledge, photographic realism will lose credibility (Ritchin, 1990). Today the contributions of computer imaging are often mostly recognized for their technical novelty. The content in many cases is irrelevant. Viewers will increasingly demand more content and context from computer imaging because the form will cease to be a novelty. There will be a greater need for emphasis on visual literacy instruction in Universities for students because of the increased ability of visuals to deceive and communicate.

REDEFINING PHOTOGRAPHY

Many users of digitized images continue to work with the same restraints that were imposed by analog images. As initial photography emulated painting, initial digital imagery tends to emulate photography. As photography separated from painting and the pictorial movement, digital photography must also find its own rules. Electronic photography is considered a lessor craft by many traditional photographers because it is thought of as a replacement for tasks better suited to film. Once the role of digital images is better defined, based upon its current restraints, it will be judged on its uniqueness apart from traditional photography.

Early adopters of digital photography were influenced to a lesser degree by restraints and more impressed by real and potential freedoms offered by the technology. In most contexts, digital imaging education has focused exclusively on solving technical restraints. The digital image environment is versatile and its technique volatile to obsolescence. As a result of the rapid rate of obsolescence, it would be impossible and undesirable to teach every tool available. Only through the application of broad features can digital curriculum be made relevant. Even the broad technical skills will change, but the need for visual literacy and artistic talent will remain the same.

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